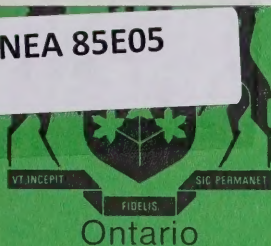


CA2ONEA 85E05

Ontario. Environmental Assessment Board.
EP-85-05

IN THE MATTER OF AN APPLICATION BY PETROSAR LIMITED FOR
APPROVAL OF THE INSTALLATION OF A WASTE DISPOSAL SITE TO
ALLOW FOR THE DISPOSAL OF OILY WASTES AND BIOLOGICAL
SLUDGE... 1985.

CA2ONEA 85E05



ENVIRONMENTAL ASSESSMENT BOARD

Earth Sciences Library

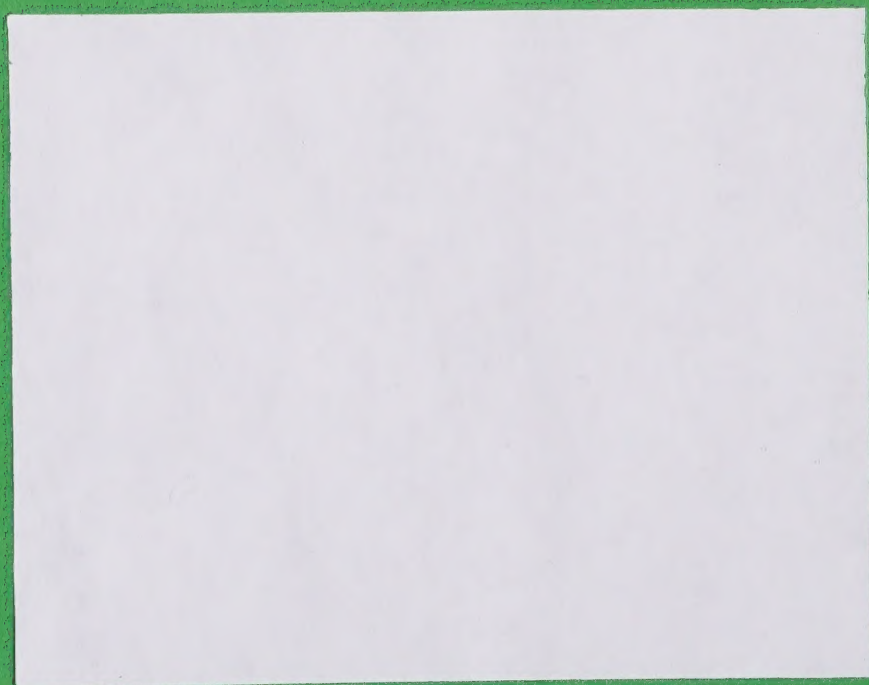


IN THE MATTER OF an application by Petrosar Limited for approval of the installation of a waste disposal site to allow for the disposal of oily wastes and biological sludge on lands owned by the said company identified as Part of Lot 24 Concession IX (785 Hill Street Corunna). Township of Moore.

BEFORE: Mr. E.E. Culin
Mr. W.A.J. Roy

Report of the Board dated October 18, 1985.

Environmental Assessment Board
1 St. Clair Ave. W. 5th Floor
Toronto, Ontario M4V 1K7



IN THE MATTER OF an application by Petrosar Limited for approval of the installation of a waste disposal site to allow for the disposal of oily wastes and biological sludge on lands owned by the said company identified as Part of Lot 24 Concession IX (785 Hill Street Corunna). Township of Moore.

BEFORE: Mr. E.E. Culin
Mr. W.A.J. Roy

Report of the Board dated October 18. 1985.



IN THE MATTER OF Section 30(1) of the Environmental
Protection Act (R.S.O. 1980 c.141) as amended

-- and --

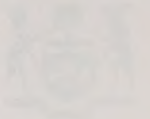
IN THE MATTER OF an application by Petrosar Limited
for approval of the installation of a waste disposal
site to allow for the disposal of oily wastes and
biological sludge on lands owned by the said
company. identified as Part of Lot 24. Concession IX
(785 Hill Street Corunna) Township of Moore.

Appearances:

J.J. Kinahan, Q.C.	- for Petrosar Ltd.
John Martin	- for the Southwestern Regional Director. Ministry of the Environment.

Witnesses:

R.A. Grimshaw, P.Eng.	- Vice-President of Manufacturing - Petrosar.
J.T. Kierstead	- Chemical and Environmental Issues - Petrosar.
D.J.R. Smyth	- Hydrogeologist, Golder Associates.
Dr. E.E. Mackintosh, P.Ag. (Professional Agrologist)	- President of Ecological Services for Planning Ltd.
Irene Martindale	- Township Resident.
M.K. Haniff, P.Eng.	- Senior Environmental Officer Southwestern Region, M.O.E.
Blagoje Novakovic, P.Eng.	- Hydrogeologist Southwestern Region, MOE.
J.R. McLaughlin	- Township Resident.



Digitized by the Internet Archive
in 2025 with funding from
University of Toronto

REPORT

A public hearing was held in the Council Chambers, Township of Moore, Bridgen, Ontario on September 10, 1985 under Section 33(1) of the Environmental Protection Act concerning the aforementioned land-spreading application by Petrosar Limited.

Mr. Culin, who chaired the hearing, and Mr. Roy, Board Member, were assisted at the hearing by Mr. H. Browne, Board Secretary. It was ascertained by the Board that the necessary notices had been given, as required by the Act. All persons who appeared were given full opportunity to be heard, to make representation by Counsel or agent and to raise questions regarding the subject matter of the hearing. A transcript of the proceedings has been made.

This report summarizes the information presented and the views expressed at the hearing. The Board's recommendation with respect to the subject matter of the hearing, together with its reasons therefor, are given.

Introduction

Mr. James J. Kinahan, Q.C. Counsel for Petrosar Limited introduced four witnesses to explain the applicant's proposal as described in the report (exhibit 5) entitled "Petrosar Limited Landscaping Facility Application Package May 1985." The proponents witnesses used various exhibits and slides (exhibit 11) to explain the landspreading application. Mr. Robert Alfred Grimshaw, Plant Manager and Vice-President of Manufacturing, provided general comments regarding the Company and the proposed project.

Mr. John Theodore Kierstead presented an overview of the waste disposal system. The hydrogeology aspects were outlined by Mr. David John R. Smyth. The applicant's last witness, Dr. Erven E. Mackintosh, described the soil sampling program for the proposed land farm site.

Petrosar Limited

Petrosar Limited supplies about 40 percent of the Canadian demand for basic (primary) petrochemicals to the petrochemical industries. The replacement value of the plant which began operations in 1977 was given as one billion dollars. Prior to June of this year the Company was partly owned by Polysar, Dupont and Union Carbide of Canada but it is now wholly owned by Polysar Limited and employs approximately 540 people. The Petrosar refinery is Canada's first world-scale petrochemical refinery.

Mr. Grimshaw explained that the landfarming proposal originally was planned to serve only the Petrosar facility. However, with the change of ownership, the landfarming would also serve the needs of Polysar's Sarnia operations and transportation systems.

Mr. Grimshaw advised Mr. McLaughlin, a local resident, that every precaution would be taken to minimize odours from the landfarm operations. The Company's employees will be closer to the landfarm than any others.

Existing Waste Management Systems

With the use of slides (exhibit 11) Mr. J.T. Kierstead, Chemical Environmental Advisor for Petrosar, described the existing waste

streams and methods of treatment. It was indicated that Petrosar has a policy of disposing of all wastes in an environmentally acceptable manner and attempts to reduce, reuse, recycle and recover wastes according to Ontario's Blueprint for Waste Management.

There are four main waste streams at the plant: the chemical system, the oily system, the sanitary sewage treatment system, and the storm water collection system.

In the chemical system, wastes flow from various petrochemical process units through a separate collection system to a primary oil separator. Free oil is recovered from the surface and the settled sludge is taken from the bottom. The settled sludge is called API separator sludge or oily water separator sludge. The effluent from the separator flows to a holding pond or equalization basin where sludge accumulates and must periodically be removed by dredging. From the holding pond the effluent flows to a dissolved air flotation (D.A.F) unit where oily sludge material is removed. The D.A.F. effluent is discharged to the biological treatment unit (Biox) where micro-organisms decompose various organic compounds. Biox sludges are produced in this unit. When tertiary treatment is required, the effluent from the Biox plant is treated by an activated carbon filter bed to adsorb trace organics before being discharged to the final effluent ponds. In all cases the separated oil is recovered and reused in the plant.

In the oily waste stream system, wastes consisting of wash water and drainage water from process units are conveyed by a separate collection system to a primary oil separator, a dissolved air flotation unit (D.A.F.) and to other treatment units if necessary.

In both the oily and chemical systems, oily sludges are generated in the oily water separator, the D.A.F. unit and the holding ponds. These oily sludges which are biodegradable are currently stored in an interim holding pond located near the proposed landfarming site. The aforementioned treatment facilities cost 40 million dollars to construct.

These biodegradable sludges from Petrosar and similar sludges from Polysar are the ones which the applicant wants to spread on land. In summary the oily sludges are: oily water separator sludge, D.A.F. sludge, Biox unit sludge, pond dredging materials, storage pond sludge, unleaded storage tank bottoms sludge, oil spill material, and transportation sludges.

In addition to the Transportation of Dangerous Goods Waybill System and the MOE Waybill System the Company has an internal manifest system which tracks and controls their wastes. When wastes cannot be re-used or further processed they are transported off-site for treatment and disposal. The landfarming proposal would permit the treatment of biodegradable sludges on-site.

Landfarming

Mr. Kierstead provided an audio-video presentation on land farming prepared by PACE, the Petroleum Association for the Conservation of the Canadian Environment, which is a group consisting of ten major oil companies. Landfarming is a widely used technique for the

treatment of biodegradable refinery wastes. In the Sarnia area there are three landspreading operations managed by Suncor, Imperial Oil and Shell.

The term biodegradation disposal site is synonymous to landfarming, land application, land cultivation, sludge farming, landspreading and soil incorporation. The process involves mixing organic petroleum wastes into the soil where natural micro-organisms (bacteria, fungi and yeast) stabilize the wastes into harmless products such as: carbon dioxide, water and humus. Metals would be incorporated into the soil. Only the top 20 centimetres of soil are used for this biodegradation. Soil characteristics, topography, hydrogeology, geology and climate affect the suitability of a site. Medium permeability soils are considered ideal with a pH range of 6 to 7.5. The site should be relatively flat, surrounded with dykes to collect surface runoff, and the installation of drainage tiles may be necessary.

The ability of the soil to degrade the waste decreases with temperature. Therefore landfarming is a seasonal operation. The land must be disked, plowed or rototilled to aerate the upper 20 centimeters of topsoil. Nitrogen and phosphorus fertilizers are applied to the soil depending on the organic carbon content of the waste to increase the rate of hydrocarbon decomposition. The waste can be applied to the surface of the soil or be injected below the surface. After the waste application the soil should be rototilled to provide better aerobic conditions. Soils and groundwater should be monitored on a regular basis to evaluate the process.

Location of Landfarming Proposal at Petrosar

Mr. Kierstead described the proposed land farming site at Petrosar. The petrochemical refinery is located on 400 acres of Lots 23 and 24 of Concession X in The Township of Moore. The Company owns a total of 1100 acres in the area which also includes Lots 23, 24 and part of Lot 22, Concession IX and Lot 25 and part of Lot 26, Concession X. The landspreading operation would be located on 16.3 acres south of the refinery complex at the north end of Lot 24 Concession IX. A minimum of 8.5 acres would be used for spreading. The site is in the centre of the company's property about half a mile from the nearest residence.

Site Hydrogeology

Mr. David John R. Smyth, a Hydrogeologist with Golder and Associates, provided information regarding the hydrogeology of the site. He dealt with five main areas of study: soil permeability, direction and rate of ground water flow, existing ground water chemistry, leachate production and its migration and attenuation, and leachate and groundwater control.

The hydrogeological study consisted of: reviewing existing water well records and hydrogeological reports, drilling bore holes at the site, installing monitoring wells, conducting hydraulic conductivity or permeability tests, and collecting water samples for chemical analysis.

There are about 150 feet of overburden overlying the bedrock. The overburden is silt and clay tills and lucustrine clays. From the

thin based layer of silty sand till which overlies the bedrock, water wells are sometimes obtained. Yields from the silts and clays in the overburden are not sufficient for water supply purposes. The well nearest to the proposed landfarm is one half mile north of the site.

The topsoil was found to be 6 inches thick. Immediately below is a 2.5 to 8.5 feet thick layer of clayey silt till above the silt and clay till. A weathered zone ranges from 10 to 16 feet below ground surface. Intact till is located below the weathered zone.

The water table occurs at shallow depths beneath the landfarm site. In August and September of 1984 it was 4 feet below ground surface at the south part of the site and 10 feet at the north boundary. With respect to the hydraulic gradient, the water table has a 6 foot drop per 1000 feet towards the north to the Allingham Drain. There is also a lateral component towards the east and west boundaries. The downward component of the hydraulic gradient is approximately 10%.

The Consultant calculated that the average horizontal discharge of groundwater to the Allingham Drain would be very low at one gallon per day. The vertical discharge would be less than one gallon per day.

There was no evidence that the brine pond on the property has affected the chloride content of the groundwater. The bulk of the oil sludge will be immobile in the clay soil on the landfarm area. The movement of the leachate through the soil would be very slow and contaminants would be adsorbed onto the clay soil particles and organic contaminants would be biodegraded. The shallow groundwater

is not used for water supply purposes in the area of the refinery. Mr. Smyth noted that in addition to the suitability of the natural hydrogeological conditions for landfilling purposes, the installation of an agricultural drainage network and a system to control surface runoff will provide additional protection for the surface and groundwater in the area.

Soil Quality

Dr. E.E. Mackintosh of Ecological Services for Planning Limited undertook a soil sampling programme to establish baseline levels for a range of physical and chemical soil properties to use as reference for future monitoring of the area.

The soils were found to contain 4.5 percent organic matter which is normal for this area. The low phosphate levels indicate the lack of fertilization for a period of time. The heavy metal content was consistent with base line levels found in other studies. Because of free carbonates within the upper 20 to 30 centimetres of the soil, most of the heavy metals will be retained in the soil. The cation exchange capacity dominated by exchangeable calcium and magnesium was normal for this area. He noted that the soil texture was mainly a clay loam which provides basically an ideal site for landfarming.

Landfarm Design

Mr. Kierstead described the design features of the proposed facility. A perforated drain would be installed around the disposal area at a depth of 6 feet. It would drain to a valve pit where the drainage could be directed either to the holding pond or the Allingham Drain. This drain prevents surface water from the surrounding area entering the site.

Underdrainage systems consisting of perforated polyethylene tiles would be installed under each of the 8 spreading areas. These tiles would be at 20-foot centres and would drain to a holding pond with a half million gallon capacity at the north of the spreading area. This system has the capacity to retain the water generated from a one and a half inch rainfall in 24 hours. It is anticipated that the collected water would meet MOE Effluent Quality Guidelines for discharge to the Allingham Drain which flows to the St. Clair River. If the drainage water does not meet the guidelines after testing it would be returned via a return water pump and piping to the existing oily water treatment facilities.

During inactive or non-spreading periods sludge would be stored in a diked storage area near the centre of the landfarm . All the ponds would be excavated into the existing clay. The liquid sludge pond would be capable of storing one half million gallons. Adjacent to the liquid storage pond would be a solid waste storage area. A catch basin and drainage system would connect the solid waste area to the liquid waste storage pond. This would permit dewatering of the solid wastes.

A system of access roadways would be constructed at 116-foot centres between the eight spreading areas. A low perimeter berm and shallow surface water ditch would be installed around the site to prevent any surface runoff from leaving the site. A six-foot high security fence would be provided around the site.

Operation

A detailed operating plan and training programme would be developed. A dump truck would deposit the solid waste at the solid waste dewatering area. After dewatering, a small front-end loader would be used to load the material into a standard agricultural manure spreader. It would then be distributed onto a designated area of the site.

Sludge of a more liquid nature would be transported and applied to the site using a vacuum truck equipped with a special spray. This would allow the material to be spread evenly over the site from the access roads. During inactive periods, liquid sludges would be stored in the liquid waste holding pond. Oily wastes separated during storage would be removed by a vacuum truck and transported to the plant's effluent treatment facilities for recovery.

Following application the sludge is allowed to dry for about four hours before being rototilled into the soil. Nitrogen and phosphorus fertilizers are applied as needed to maintain the required nutrient balance within the topsoil zone. The spreading period corresponds to the agricultural growing season. Sludge would not be spread during periods of heavy rainfall.

The maximum application rate would be half an inch of oil per year. The oil concentration in the topsoil would normally be less than 5 per cent which is below the guideline maximum of 10 percent.

Odours would be controlled by using good operating procedures. These include: controlling the quality and quantity of wastes being spread, minimizing the drying time, and cultivating the soil as soon as conditions allow. Mr. Kierstead reported that there is very little odour from a well-operated landfarm. Neighbouring residents should not be affected by odours since the facility is located near the centre of the refinery property. Rates of application and frequency of cultivation could be adjusted to correct odour problems.

Monitoring Programme

A comprehensive monitoring programme would be developed. The quality and the composition of the spreadable wastes, soil, groundwater and surface water would be measured. This could be done in three phases: pre-monitoring, ongoing monitoring, and post closure monitoring. Eleven test bore holes at various locations would be used for monitoring the groundwater.

Samples of all the sludges from the various locations of origin at the refinery would be sent to an external laboratory for analyses. About 2850 cubic metres of oily sludge per year would be generated at Petrosar and 1010 cubic metres at Polysar. In addition there are at present about 3800 cubic metres of oily sludge in the sludge storage pond that would be land farmed over a 2 year period. Thus the application rate for the first 2 years would be 4750 cubic metres per year and 3860 cubic metres the third year.

Based on a maximum of the half inch of oil per year, 436 cubic metres of oil per year could be applied to the 8.5 acres spreading area. Thus the rates of sludge application will depend on the oil

concentration of the sludge not to exceed the oil guideline. Thus the oil concentrations will be monitored on a regular basis.

The topsoil will be monitored frequently to determine fertilizer requirements, application rates, and site performance trends. It will also be monitored in the spring and fall.

Twice a year, once in the mid-spreading season and once in the fall, the groundwater will be monitored. Leachate collected in the drainage water holding pond from the drainage tile system and the periphery drainage system would be analyzed for various parameters to determine if it is acceptable for discharge to the St. Clair River via the Allingham Drain.

Extensive monitoring will also take place when the site is closed. The post-closure monitoring schedule would be determined in consultation with the MOE. Site closure will occur if heavy metal levels in the topsoil and subsoils reach high concentrations compared to background levels. These metal concentrations might increase with time. Thus the lifespan of the landspreading site will depend on several factors, including the intensity of use and the concentration of contaminant material in the sludge and original soil.

Mr. Kierstead concluded that the best practicable technology would be installed, the best operating practices would be employed, and the facility would be monitored to ensure that no external impact occurred. The application of sludge would be stopped if an unacceptable impact was found, and the problem would be corrected.

Landspreading is a proven and accepted method of disposal of biodegradable wastes.

Cross-examination of Applicant's Witnesses

Mr. Martin, Counsel for the Regional Director of the Ministry of the Environment, questioned the applicant's panel of witnesses for clarification of certain matters. Mr. Kierstead advised Mr. Martin that although the landfarm site was 16.3 acres, the actual area for landspreading would be a minimum of 8.5 acres. The maximum spreading area would be 9.5 acres depending on the slope of the landspreading beds at the access roadways.

It was noted that the maximum rate of application of one half inch of oil per year was equivalent to a rate of 11,300 gallons per acre per year. Thus the acreage and the oil application control the amount of sludge that can be applied to the site. That is, five times as much sludge containing 2% oil could be applied as compared to a 10% oil sludge.

The amounts of sludges and the oil contents would be recorded in the operations manual which would be available for Ministry inspection at all times.

Mr. Martin reviewed the type and amounts of sludges and their classification with the panel as outlined in the application and attachments of exhibit 5. The 1010 cubic metres of wastes from Polysar would be similar quality to the Petrosar wastes. That is wastes from Polysar that are not similar to the categories accepted from Petrosar would not be landfarmed. A detailed analysis of the

oil contents of the various Polysar sludges would be made as has been done for the Petrosar sludges.

Mr. Martin referred Mr. Kierstead to page 6 of exhibit 15, "Liquid Effluent Guidelines For The Petroleum Refinery Industry". On page 6 the Ontario Effluent Quality Objectives for Petroleum Refineries are listed. The applicant indicated a willingness to test the holding pond contents before discharge to the Drain for these parameters; oil & grease, phenols, suspended solids, ammonia nitrogen, COD, pH, chromium, copper, nickel, lead and zinc. If the contents of the holding pond meet the criteria then the effluent could be discharged to the Allingham Drain. If not, then it would be conveyed through a 1200-foot pipeline extension to the treatment plant. Mr. Kierstead advised Mr. Martin that all the pre-monitoring had been done. During the operations three sets of sampling points each with a shallow and deep well would be tested for monitoring the groundwater quality. The wells are upstream, downstream and on site by the waste pond. In addition to the parameters outlined on Page 17 of exhibit 5, chlorides would also be analyzed.

Mr. Martin submitted a list of conditions (exhibit 16) suggested by the Regional Director to Mr. Kierstead. Mr. Kinnahan reported that the applicant would have no problem adopting these conditions. The first dealt with a maximum dosage rate of oil contained in the sludge of 11,300 gallons (51,300 litres) per acre per year. The second condition pertained to the submission of the proposed detailed site operation and development manual to the Ministry for approval. This manual would contain information on the proposed surface and groundwater monitoring programs, the contingency plan, and compliance with the maximum dosage rate. The third condition related to the

spreading period. Dr. Mackintosh suggested that waste spreading should occur during the agricultural season from May 1st to October 31st. The spreading should only be done during such climatic times and in such quantities to ensure that the contamination of the ground and surface waters do not occur. The fourth condition related to wastes from Polysar. It was suggested that no wastes from Polysar should be accepted for landspreading without detailed information about its suitability for landfarming and without the written authorization of the MOE District Officer. In the fifth and last condition, it was requested that an annual report on the operating and monitoring results be submitted to the Regional Director.

Mr. Kinhanan expressed a concern about the ambiguous wording of condition 4. The applicant did not want to be in a position that Ministry approval would be required every time waste is received from Polysar. He agreed that each type of Polysar waste should be tested initially but if the wastes did not change and were compatible for landfarming than there should be no need for testing each time a load is delivered to Petrosar. Mr. Martin agreed that it was not the intention of condition 4 that every individual load from Polysar be tested. However he noted that as of September 17, 1985, Regulation 309 as amended, requires a manifest for trans-shipment of waste from Polysar to Petrosar. Thus it would only be necessary to ensure that the contents of the truckloads from Polysar were the types of wastes listed in the applicant's certificate of approval that were compatible for landspreading.

Mr. J. McLaughlin of 844 Hill Street, north of Petrosar, requested clarification about the quantity of sludge to be spread on the land.

Mr. Kierstead noted that the maximum dosage rate related to oil content. The amount of sludge to be spread would be much higher since it contained only 2 to 3 percent of oil.

Mr. Bob McClemens of Lot 21, Concession IX, Township of Moore questioned the applicant about well records in the area. Mr. Smyth reported that he had checked the MOE water well records in the vicinity of the site. There were no records of surface wells in the immediate area. The wells were generally drilled to the sandy till that immediately overlies the bedrock. Mr. McClemens reported that there were two surface wells, 20 feet deep, on Lot 21, Concession IX about one mile from the site.

Mr. Keith Payne, who lives across the 8th Line from Petrosar on Lot 24 Concession VIII expressed concern about the possibility of odours. Although Mr. Kierstead did not believe that odours would be a problem for neighbours the contingency plan was described. If a problem arose, then spreading would stop and the material would be rototilled into the ground as soon as possible. Mr. Kierstead suggested that if odour problems developed then the resident should contact the MOE or the plant shift superintendent. A superintendent is available at the plant 24 hours a day. In response to Mr. Payne's concern that deep wells might be affected by the landspreading, Mr. Smyth noted that there were approximately 150 feet of clay and silt separating landspreading and the deep aquifer. The vertical groundwater migration was one metre in a thousand to 10 thousand years. Therefore the possibility of polluting the deep wells was very remote.

Ms. Shirley Morrison of Lot 7, Concession IX stated that it was difficult for citizens to participate in the hearing process without adequate resources to hire experts.

In response to questions from Mr. Roy, Mr. Kierstead noted that the dosage rate limitation of 1/2 inch of oil per acre per year was based on restricting the oil content of the topsoil to not greater than 10 percent. If the oil content exceeded this amount, then the material becomes toxic to the micro-organisms and the natural composting procedure does not occur. If this happened, then the material would be removed so that the 5 to 10 percent oil in soil range could be maintained.

In regard to heavy metals, since it is not the intention to return the site to agricultural use, the agricultural regulations for metal concentrations would not apply.

Ministry of the Environment

Mr. Martin introduced two witnesses, Mr. Blagoje Novakovic P.Eng, Hydrogeologist and Mr. M. Khalil Haniff, P.Eng. Senior Environmental officer with the Southwestern Region of the Ministry of the Environment. The suggested conditions, exhibit 16, were developed by these two Ministry engineers in consultation with others.

In regard to Mr. McClemens concern about his shallow well located one mile southeast of the site, Mr. Novakovic did not believe there was any potential for contamination of this well by the landspreading operation. Percolated leachate would be collected in the subsurface tiles and directed to the holding pond. In addition the perimeter

drain would prevent the migration of any effluent away from the site. The groundwater flow is in a northerly direction.

Mr. Haniff addressed the possibility of odours which was the other major concern. He was satisfied with the contingencies proposed by the Applicant. The system design should ensure that aerobic conditions prevail in the topsoil for the biodegradation process.

In response to a question by Ms. Morrison to the Ministry staff, Mr. Kierstead reported that the actual physical operation at the site such as waste spreading would be conducted by an outside contractor who currently manages three other landfarms in the area. An agreement with this contractor has not yet been executed. Ms. Morrison noted that a lot of local farmers have experience operating manure spreaders, tractors and trucks.

To Mr. Haniff's knowledge, there have been no complaints received at the MOE Sarnia Office regarding odours from the three operating landspreading operations in the Sarnia area. It was noted that there are also landfarm operations in other parts of the Province.

Evidence of Mr. James R. McLaughlin

Mr. McLaughlin of Lot 24, Concession IX (785 Hill St.) Township of Moore submitted a letter, exhibit 20, outlining his concerns regarding the proposal. In his letter the exact location and amount of wastes were questioned. He wanted more specific information on these two matters. The suitability of depositing Polysar's wastes at the site was also questioned. In addition he was concerned about the type of wastes that would be received from Polysar.

He suggested the possibility that the evaporation of oily wastes could be carcinogenic. This could present a public health hazard to neighbouring residents. He questioned whether Petrosar was really sincere in its commitment to environmental concerns or if their prime motive was the reduction of waste disposal costs for both Polysar and Petrosar.

Odours from the microbial decomposition were also a prime concern of Mr. McLaughlin. He believed that the summer winds predominantly from the southwest would subject him to foul odours. As the result of past experiences with noise and television reception interference he was sceptical that either the Ministry or Petrosar would be able to take corrective action. Noise problems from Petrosar operations had been experienced in the past but this problem had been corrected.

Mr. McLaughlin concluded that the company had everything to gain and nothing to lose through this application whereas the residents had nothing to gain and much to lose. Thus he hoped the Board would insist on adequate controls to protect the interests of the residents. Mr. McLaughlin indicated that his letter was prompted by lack of information and his real concern relates to odour. Most of his concerns had been answered by the Applicant and he just hoped that the answers would prove to be true. Mr. Kinahan assured Mr. McLaughlin that the Plant Manager and Petrosar staff would make a real effort to rectify any problems. Mr. McLaughlin noted that he was the only resident in his area who lived on his own property. The other residents in the area lived on lands owned by Shell Oil Company or someone else.

In response to Mr. McLaughlin's question about possible toxic vapours from the landspreading operations, Mr. Haniff noted that most of the sludges were predominantly heavy materials with low volatile components. Their classification as hazardous industrial liquid wastes was mainly because of the heavy metal content which does not evaporate.

Mr. Kierstead advised that the lifetime of the site would depend on the cation exchange capacity of the soil and/or the phytotoxicology levels of the metals to the micro-organisms. He anticipated a site lifetime of approximately 75 years.

Evidence of Irene and Peter Martindale

Mrs. Martindale read a letter, exhibit 17, composed by her husband. The Martindales live on Lot 16, Concession X, on the 10th Line, approximately four miles east of the site.

In this letter objections were expressed to the proposed landfarming operations because of the possible development of groundwater and well contamination and odour problems. It was also their belief that the existing Tricil waste disposal facility could be capable of treating the wastes. There was also concern that the proposed site would be used for wastes trucked in from other locations resulting in spills and contamination.

Summation--Ministry of the Environment

On behalf of the Regional Director, Mr. Martin, in argument, requested that the Board consider their suggested conditions submitted as exhibit 16. Mr. Martin recommended that a comprehensive manual be formulated by the Applicant in which details would be provided on daily operations, contingency planning, and monitoring. The monitoring programme should include information on the number of wells to be sampled, the frequency of sampling and the parameters to be sampled. Approval by the Director of this manual should be obtained before sludge spreading commences.

Although the recommended spreading season was from May 1 to October 31, in order to take advantage of good conditions that sometimes occur in March and November, the applicant could get written approval from the District Officer in Sarnia for those occasions. It is understood that spreading will take place only when climatic conditions are suitable.

Mr. Martin also suggested that the annual report on the Applicant's operations requested in condition 5 of exhibit 16 should be made public so that the local residents would be aware of the situation at the site. He also believed that an additional appropriate condition would be that no surface water be discharged to the Allingham Drain unless it meets the Effluent Quality Objectives for Petroleum Refineries, as outlined in Table I of Page 6 of exhibit 15.

Mr. Martin concluded that landspreading was a proven technology which appears to operate satisfactorily at three other locations in the Sarnia area and hopefully Petrosar could make it work at this location.

Summation--The Applicant

In argument, Mr. Kinahan restated that Petrosar is concerned about the health, safety and environment of the area. It is attempting to be a good corporate citizen and satisfy any complaints. This application would permit Petrosar to handle its wastes in a better way and in a responsible manner. The proposed landfarm site would be close to the plant on property owned by the company. Thus he requested that the application be approved.

Conclusions

After due consideration of the information presented, evidence given and the views expressed at the hearing, as summarized in this report, the recommendation of the Board is made for the following reasons:

- 1) Landfarming is a proven technology with three such operations at the present time in the Sarnia area. The evidence indicated that there have been no adverse environmental effects reported as a result of these landspreading operations.
- 2) The landfarming proposal at Petrosar would be designed and operated according to accepted technical standards.

- 3) The proposed site is located in an industrial area approximately one half mile from the nearest residence.
- 4) The hydrogeological conditions at the site are ideal for landfarming. Groundwater and surface water pollution should not occur. Underdrains and perimeter drains would intercept the percolated leachate and convey it to a holding pond where the contents would be analyzed to determine whether the effluent could be discharged to the Drain or should be returned to the Petrosar treatment plant.
- 5) Odours should not be a problem at this site if the facility is operated as planned. The sludge dosage is based on maintaining aerobic conditions for biodegradation of the wastes. There is a half mile separation between the site and the nearest residence. A contingency plan is proposed in case odours did occur.
- 6) The evidence indicated that private water supply wells in the area are mainly from the 150 foot deep aquifer. Since the vertical migration rate of groundwater is less than 3 feet in one thousand years, these wells should not be affected by this proposal. Mr. McClemen's shallow well one mile southeast of the site would not be affected since groundwater in the area moves in a northerly direction.
- 7) Since the site is located in an industrial area, any toxic build-up of heavy metals in the soil would not adversely

affect the future use of the land since it would not be returned to agricultural use.

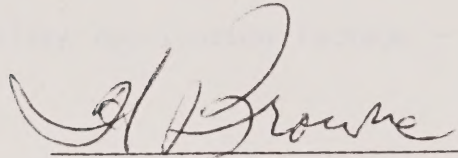
- 8) A comprehensive monitoring programme is proposed.

Recommendation

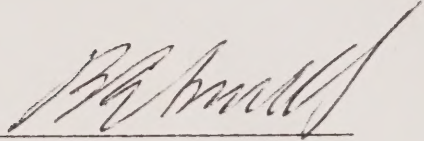
It is, therefore, recommended that the application by Petrosar Limited for approval of the installation of a waste disposal site to allow for the disposal of oily wastes and biological sludge on lands owned by the applicant on Part of Lot 24, Concession IX in the Township of Moore, be approved, subject to the submission of satisfactory plans and specifications and subject to the following conditions:

- 1) A comprehensive manual detailing the daily operations, contingency planning and monitoring be developed in conjunction with the Ministry of the Environment.
- 2) An annual report of the operational information and monitoring results should be submitted to the Regional Director, Southwestern Region, Ministry of the Environment. This annual report should also be available to the public.
- 3) The application of waste to the land should not exceed the rate of one half inch of oil per year.

- 4) Only oily wastes that are compatible with landspreading disposal shall be deposited on the site.



H. Browne
Board Secretary



B.E. Smith
Chairman

Exhibits (EP-85-05)

- 1) Affidavit of Service by Marilyn Corrigan, dated August 9, 1985.
- 2) Affidavit of Service of Amended Notice dated August 22, 1985.
- 3) Affidavit from Mr. Kierstead dated September 10, 1985.
- 4) Application for Certificate of Approval.
- 5) Petrosar Ltd. landspreading Facility Application Package - May 1985.
- 6) Ten drawings, updated version
 - #E-95143 - AA
 - E-95143 - BB
 - E-95143 - CC
 - E-95143 - DD
 - E-95143 - EE
 - E-95143 - FF
 - E-95143 - GG
 - E-95143 - HH
 - E-90142 - A
 - E-90147 - Q
- 7) Drawing #E-00010L - General Layout of Moore Township.
- 8) Curriculum vitae of Bob Grimshaw.
- 9) Curriculum vitae of Ted Kierstead.
- 10) Package of 60 slides, title Petrosar's Landspreading Operation.
- 11) Slides. PACE - Biodegradation of Petroleum Industry Waste.
- 12) Curriculum vitae of Dr. D.J.R. Smyth.
- 13) Text of presentation.
- 14) Curriculum vitae of Dr. Erven E. Mackintosh.
- 15) Liquid Effluent Guidelines for the Petroleum Refining Industry dated September 1977.
- 16) Proposed Conditions by MOE for Petrosar.
- 17) Letter dated September 9, 1985 from Peter Martindale.
- 18) Curriculum vitae of M. Khalil Haniff.
- 19) Curriculum vitae of Blagoje Novakovic.
- 20) Letter dated August 30, 1985 from Mr. James R. McLaughlin.

CA20NEA 85E05
Ontario Environmental Assessment Board
EP-85-05
IN THE MATTER OF AN APPLICATION BY PETRO
APPROVAL OF THE INSTALLATION OF A WASTE

**RESOURCE CENTRE
INST. FOR ENVIRON'L. STUDIES
UNIVERSITY OF TORONTO**



